

CLAIMS:

1. A method of preparing a dialkyl carbonate, comprising:

reacting an alkanol, oxygen, carbon monoxide, and a catalyst to form a mixture comprising a dialkyl carbonate, an alkyl chloroformate, hydrochloric acid, water, carbon dioxide, and carbon monoxide;

separating from the reaction mixture a liquid fraction comprising alkyl chloroformate; and

passing said liquid fraction through a fluid passageway at a temperature of about 30°C to about 130°C and for a time of about 0.5 hour to about 10 hours; wherein said fluid passageway has a length to diameter ratio of at least about 0.2.
2. The method of Claim 1, wherein said alkanol comprises methanol.
3. The method of Claim 1, wherein said reacting said alkanol, said oxygen, and said carbon monoxide comprises feeding said alkanol, said oxygen, and said carbon monoxide to a reactor in a molar ratio of (about 0.5 to about 0.7 alkanol):(about 0.04 to about 0.06 oxygen):(about 0.8 to about 1.2 carbon monoxide).
4. The method of Claim 1, wherein said catalyst comprises a metal selected from the group consisting of iron, copper, nickel, cobalt, zinc, ruthenium, rhodium, palladium, silver, cadmium, rhenium, osmium, iridium, platinum, gold, mercury, and combinations comprising at least one of the foregoing metals.
5. The method of Claim 1, wherein said catalyst comprises copper.
6. The method of Claim 1, wherein said catalyst comprises hydrochloric acid.
7. The method of Claim 1, wherein said catalyst comprises hydrochloric acid and copper in a molar ratio of about 0.5 to about 1.5.

8. The method of Claim 1, wherein said fluid passageway comprises a holding vessel having a length to diameter ratio less than 5.

9. The method of Claim 1, wherein said fluid passageway comprises a plurality of holding vessels having a length to diameter ratio less than 5.

10. The method of Claim 1, wherein said fluid passageway comprises a section having a length to diameter ratio of at least 5.

11. The method of Claim 1, wherein passing said liquid fraction through a fluid passageway comprises passing said liquid fraction through at least one section having a length to diameter ratio of at least about 5 for at least about 50% of the total time spent in said fluid passageway.

12. The method of Claim 1, further comprising at least partially condensing said mixture prior to separating said liquid fraction.

13. The method of Claim 1, further comprising removing hydrochloric acid from said liquid fraction.

14. The method of Claim 13, wherein said removing hydrochloric acid comprises reducing the concentration of said hydrochloric acid to less than about 1×10^{-3} moles per liter.

15. The method of Claim 13, further comprising vaporizing said liquid fraction before said removing hydrochloric acid.

16. An apparatus for preparing a dialkyl carbonate, comprising:

a reactor for reacting an alkanol, oxygen, carbon monoxide, and a catalyst to produce a mixture comprising a dialkyl carbonate, an alkyl chloroformate, hydrochloric acid, water, carbon dioxide, and carbon monoxide;

a gas-liquid separator; and

a fluid passageway for removing alkyl chloroformate, wherein said fluid passageway has a length to diameter ratio of at least about 0.2.

17. The apparatus of Claim 16, wherein said fluid passageway comprises a holding vessel having a length to diameter ratio less than 5.

18. The apparatus of Claim 16, wherein said fluid passageway comprises a plurality of holding vessels having a length to diameter ratio less than 5.

19. The apparatus of Claim 16, wherein said fluid passageway comprises a section having a length to diameter ratio of at least about 10.